

## *Urban and Rural Arthritis: Is there a difference?*

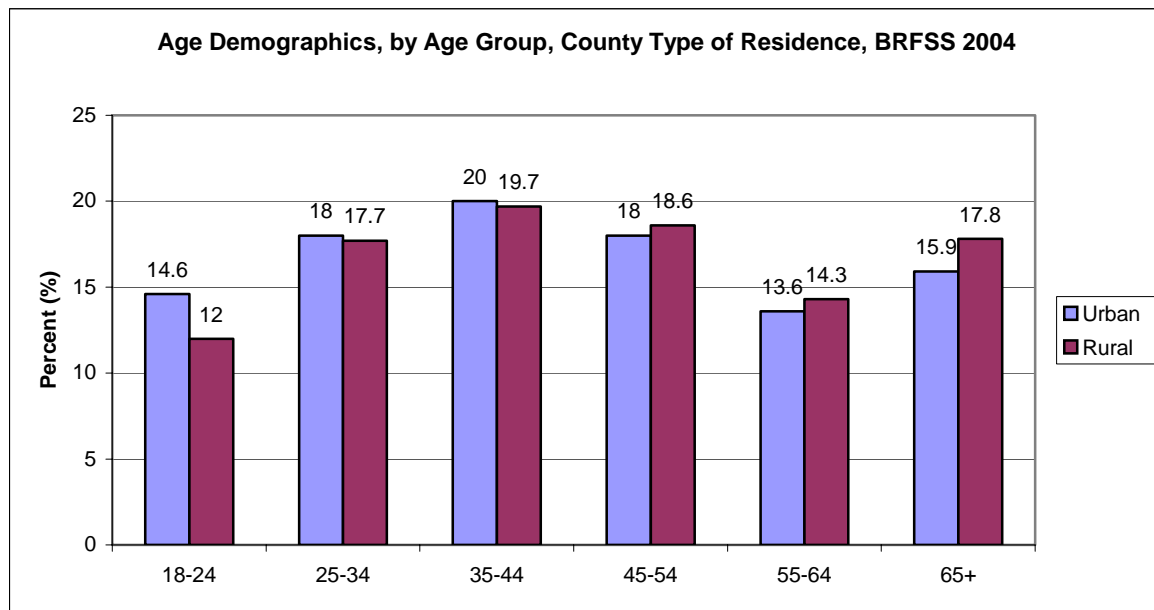
### **Background:**

In the United States in 2001, one half of the population lives in urbanized counties. Those over the age of 65 comprise more of the population in rural counties than urban counties. Urban counties are also more ethnically and racially diverse, and contain approximately 54% white population, and 20% African American population. Two major risk factors for arthritis: obesity and physical inactivity, increase in prevalence between urban and rural counties.<sup>1</sup>

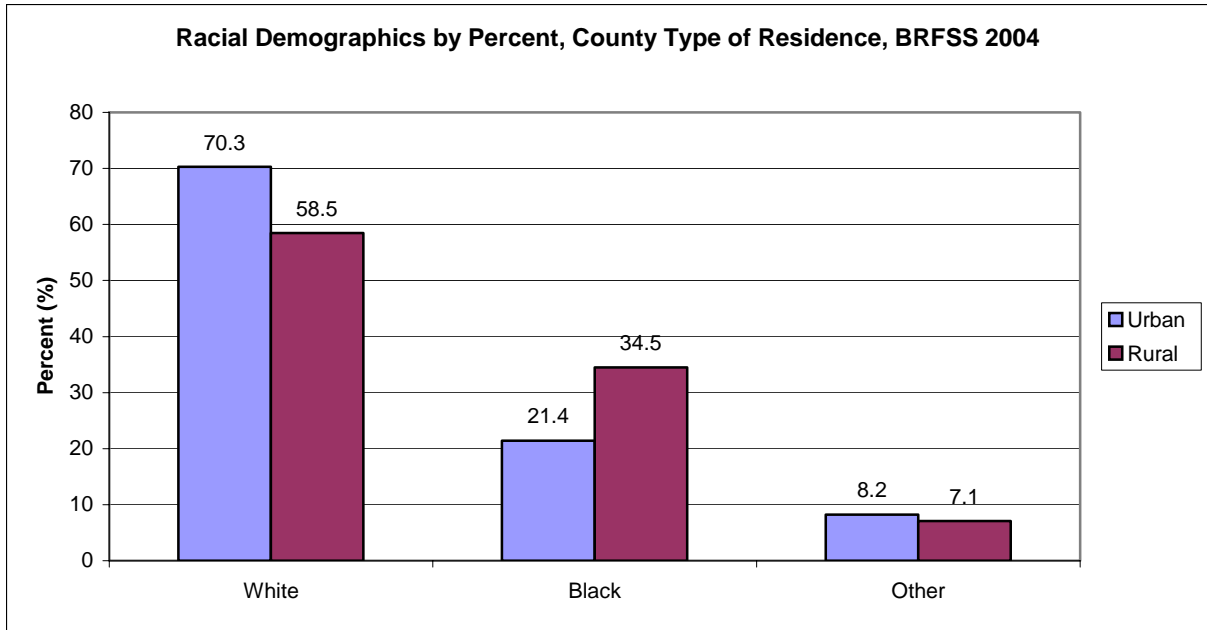
In the South Region of the United States, shows some marked differences from the United States as a whole when urban-rural health is examined. The difference in proportion of the population over the age of 65 living in rural versus urban counties is higher in the South than in any other region of the country. The South as a region has more non-Hispanic blacks living in all county types than anywhere else in the nation. In addition, physical inactivity is higher in the South among men and women than in the West and Mid-west portions of the country.<sup>1</sup>

### **Results:**

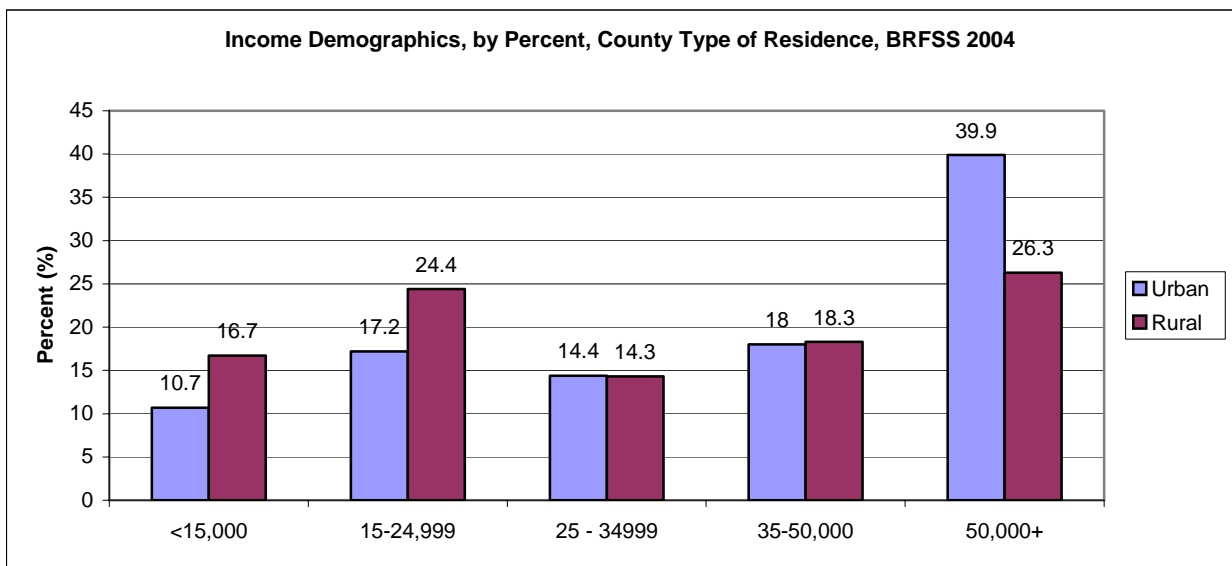
There are no significant differences in the percentage of those within age groups between urban and rural counties within South Carolina or between genders.



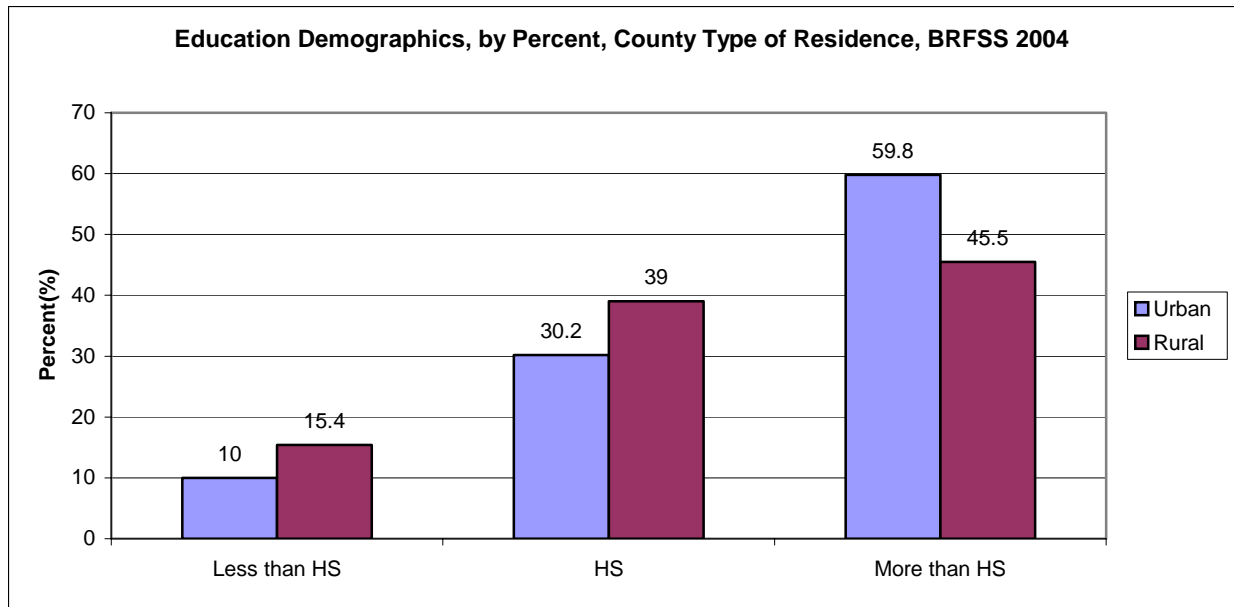
There is a higher percentage of whites in urban South Carolina than in rural South Carolina; additionally, there is a significantly larger proportion of Blacks in rural South Carolina than in urban South Carolina. Numbers were too small to determine usefulness of the 'other' racial category for South Carolina.



There is a significantly higher proportion of residents with an annual income of less than \$15,000 and an annual income of between \$15,000 to \$24,999 living in rural South Carolina than in urban South Carolina. Additionally, there is a significantly higher proportion of residents with a household income over \$50,000 per year that live in urban South Carolina.



Education follows a similar trend for urban and rural South Carolina, with a significantly higher proportion of those with higher educational attainment living in urban settings as opposed to rural settings. A significantly higher proportion of people with a high school education live in rural as opposed to urban South Carolina.



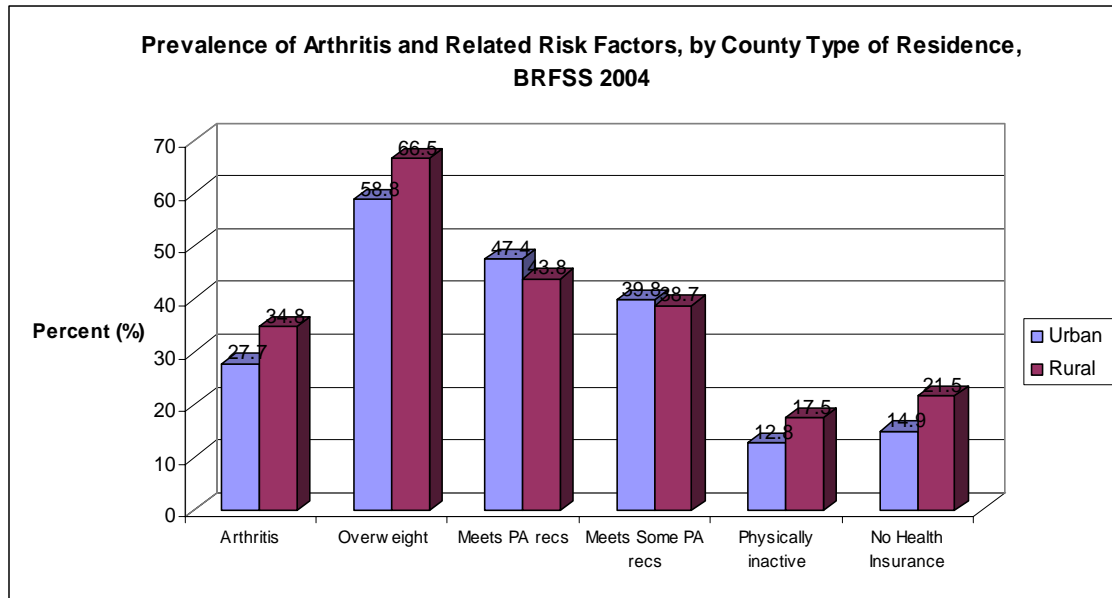
#### Risk Factors:

Some of the modifiable risk factors for arthritis are overweight and obese and physical activity. There is a significant difference of those residents who are overweight or obese between rural and urban South Carolina (66.5% versus 58.3% respectively.)

Additionally, there is a higher proportion of residents in rural than in urban South Carolina who are considered physically inactive (17.5% versus 12.8% respectively.)

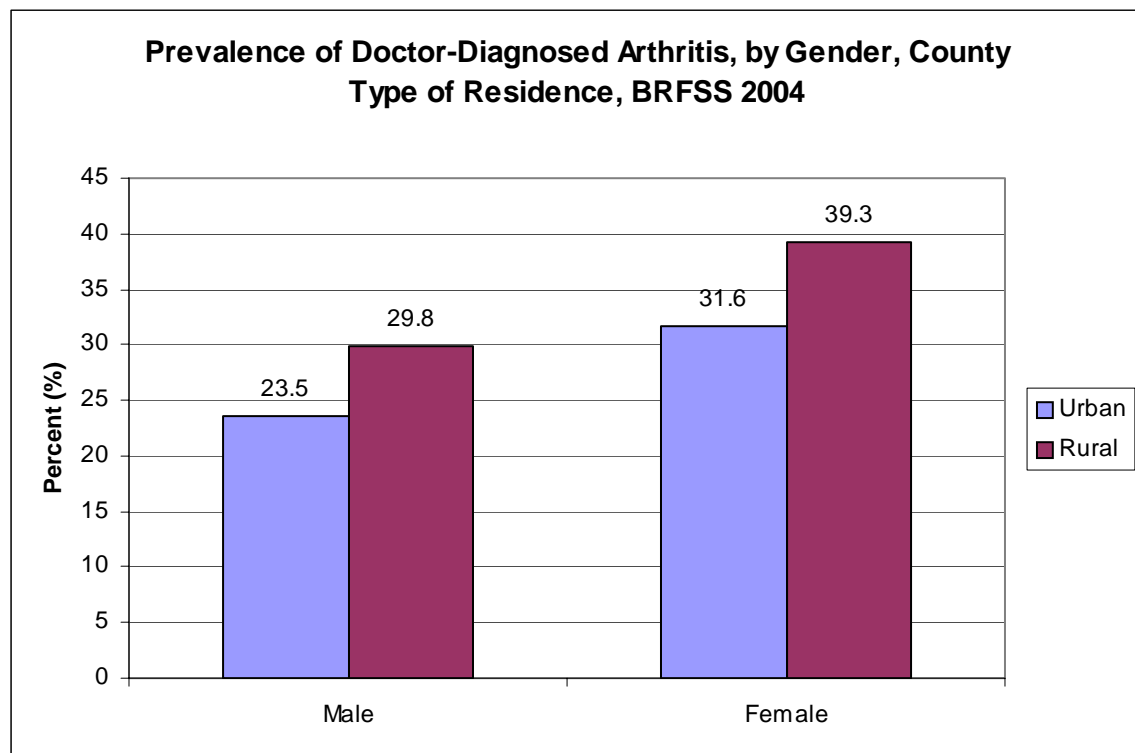
A factor that may be important for obtaining both preventive and sick health care is having health insurance. Twenty- one point five percent of adult respondents to the BRFSS living in rural South Carolina reported that they didn't have health insurance. Approximately 14.9% of residents living in urban South Carolina responded that they didn't have health insurance; this is a significant difference.

Doctor-diagnosed arthritis cases are higher in rural South Carolina (34.8%) versus urban South Carolina (27.7%).

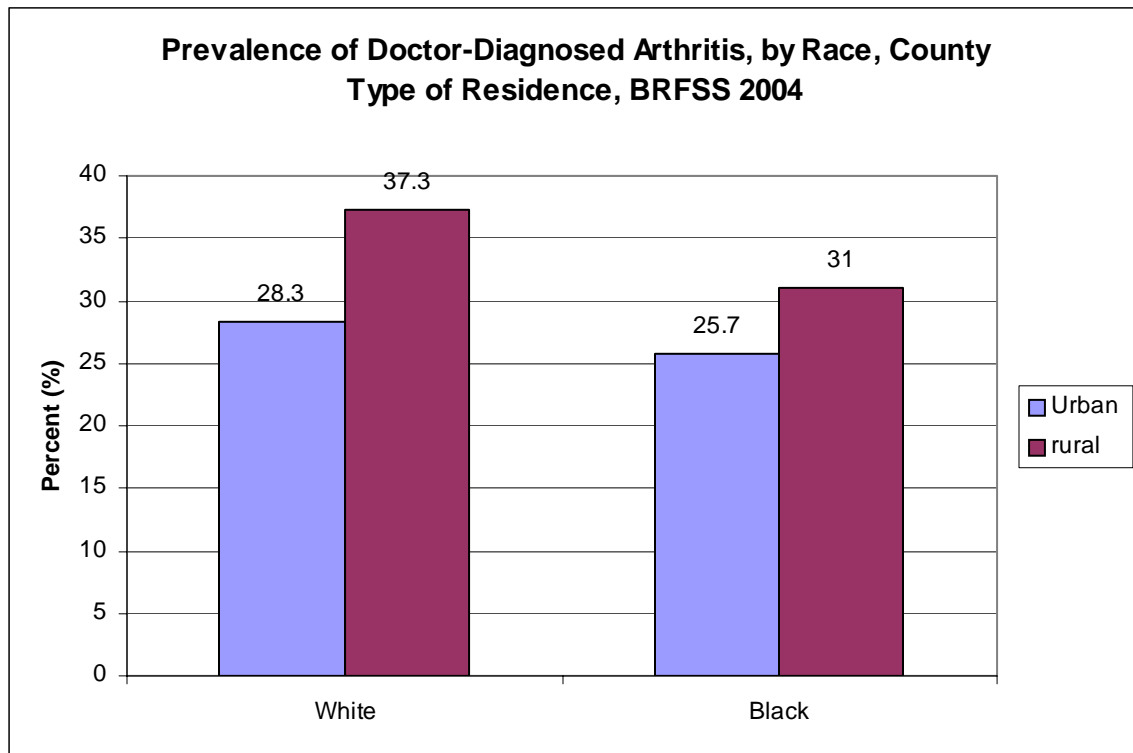


### *Demographics of Arthritis Cases in Rural and Urban South Carolina*

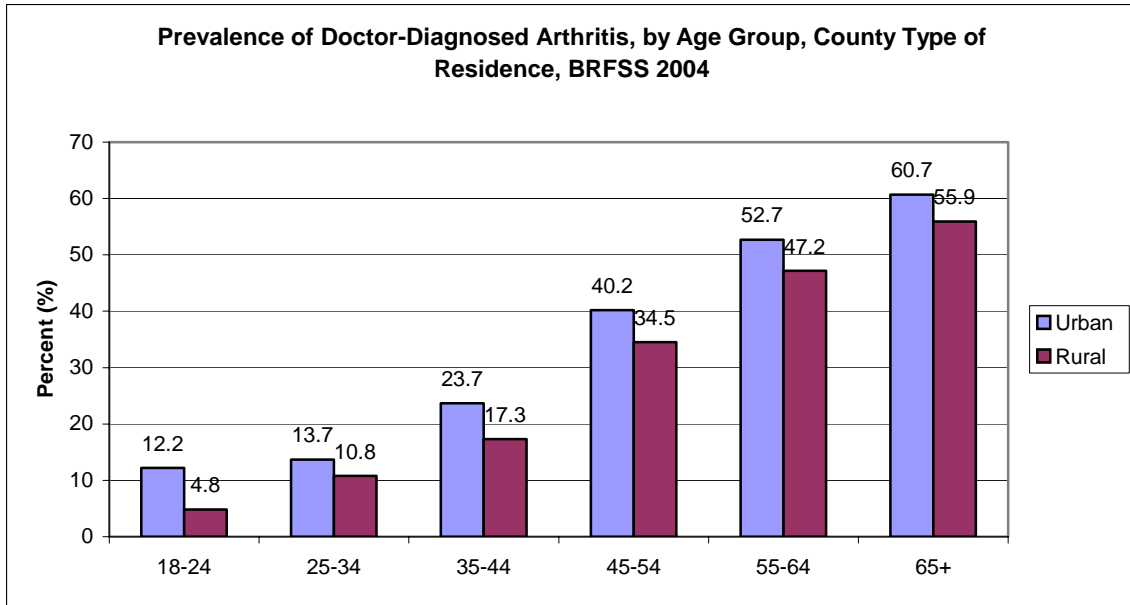
There was no significant difference in the prevalence of doctor-diagnosed arthritis for males between urban and rural counties in South Carolina. There is a significantly higher proportion of women living in rural counties with doctor-diagnosed arthritis than those living in urban counties (39.3% versus 31.6%)



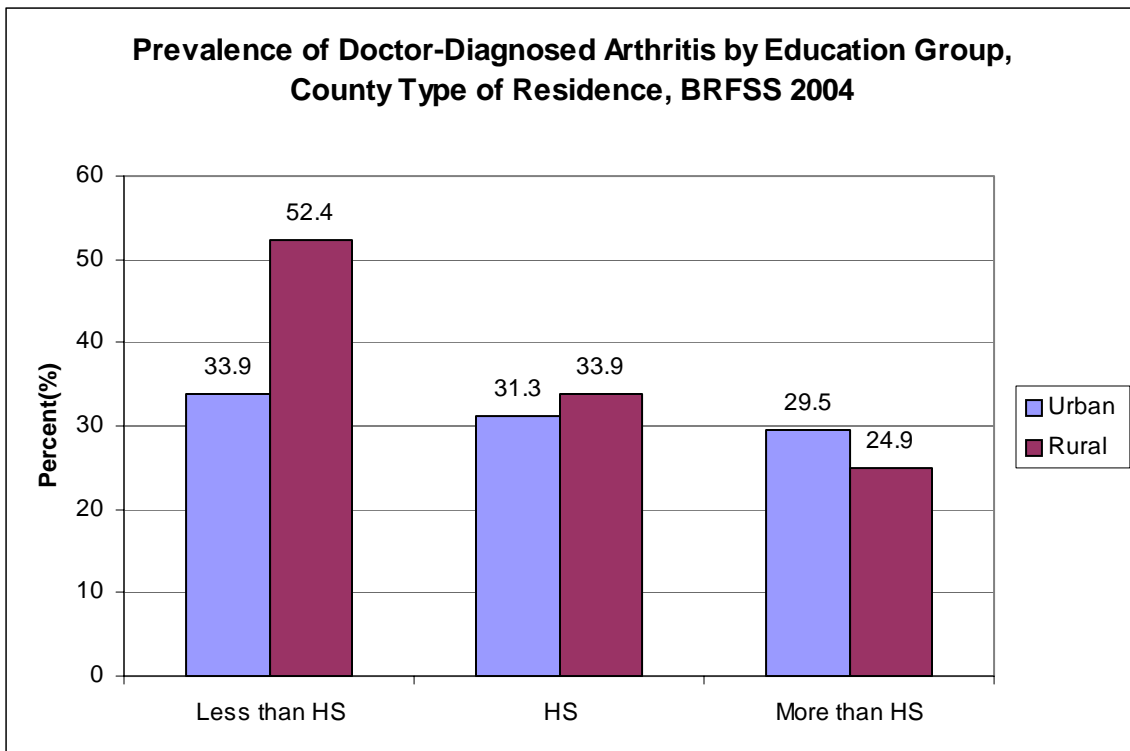
There are significantly more Caucasians living in rural South Carolina with doctor-diagnosed arthritis than there are in urban South Carolina. There is no significant difference in the prevalence of arthritis among rural and urban counties in African Americans.



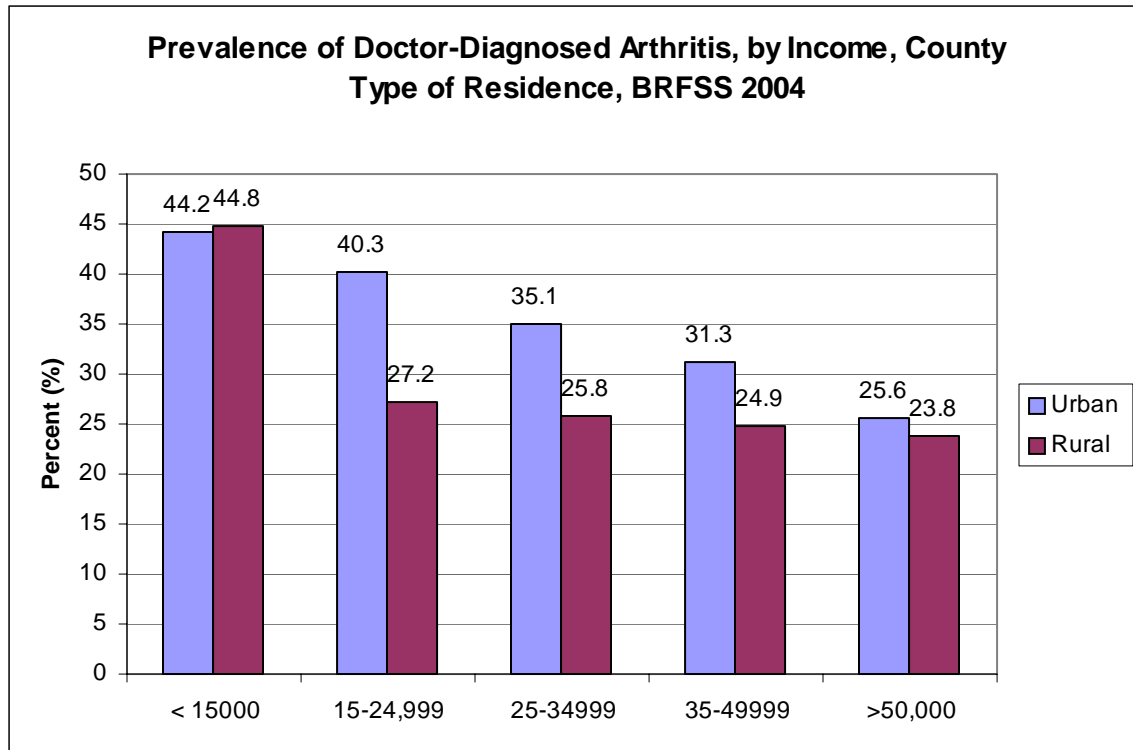
There are no significant difference in the prevalence of doctor-diagnosed arthritis among the age groups between urban and rural South Carolina.



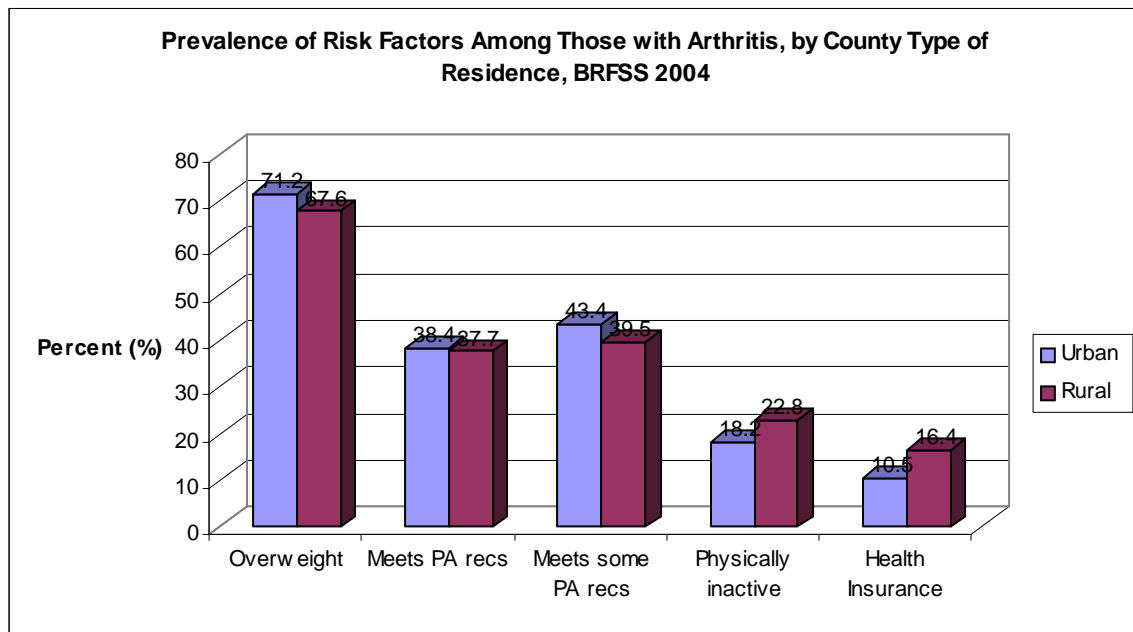
Among those residents with less than a high school education, there was a significantly higher proportion of doctor-diagnosed arthritis living in rural counties than in the urban counties of South Carolina.



And among those residents earning between \$15,000 and \$24,999 annual household income, there was significantly higher proportion of doctor-diagnosed arthritis living in rural counties than in the urban counties of the state.



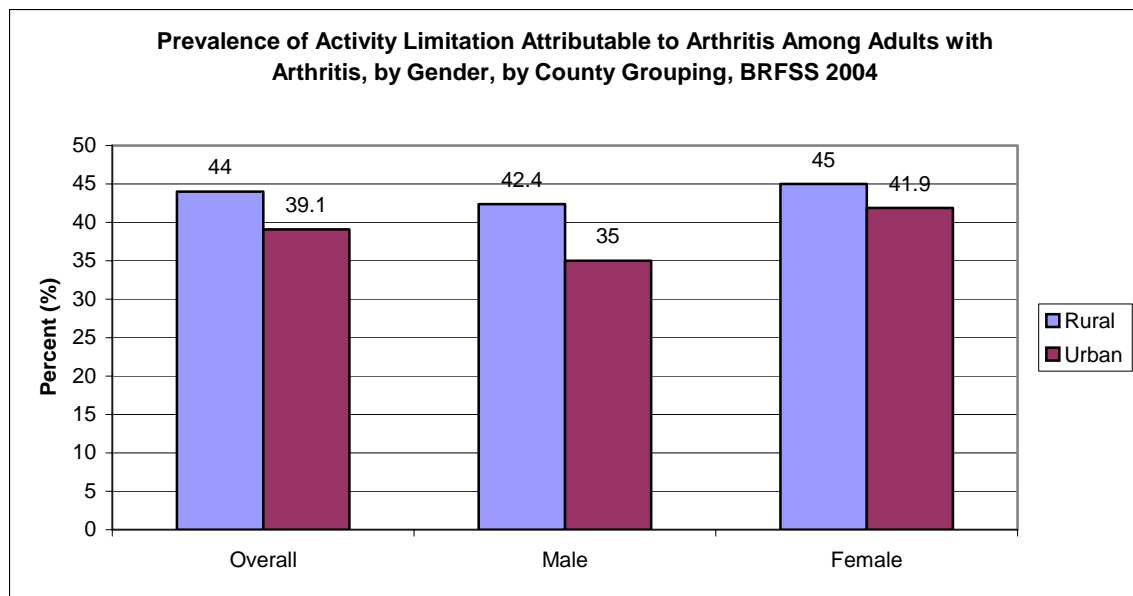
Among those with arthritis, there was no significant difference in the prevalence of being overweight or obese or in the proportion of the population that was physically inactive between urban and rural South Carolina. However, there was a significant difference in the proportion of people with arthritis who did not have health insurance between urban counties (10.5%) and rural counties in South Carolina (16.4%).



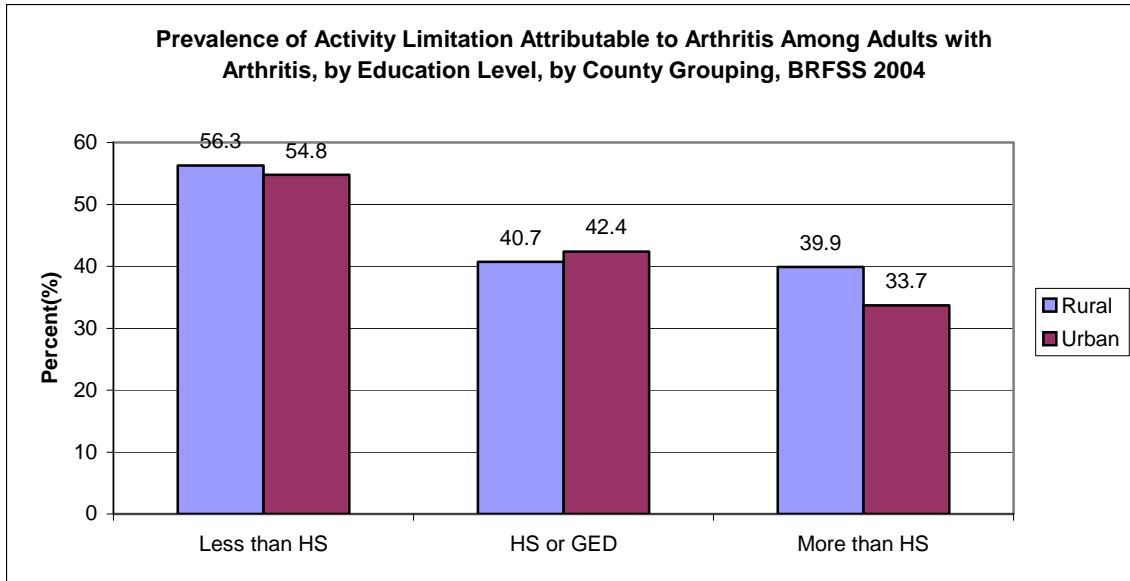
### ***Activity Limitation***

Activity limitation due to the pain and swelling of arthritis is another measure of how arthritis impacts the population. There are two ways of examining the prevalence of activity limitation: among the general population and among those people with arthritis. As the percentage of arthritis varies by subgroup, comparing activity limitation rates among arthritis sufferers will help to see if there is a difference in the subgroups between the county groupings. Likewise, to analyze the impact of activity limitation within the general population helps to create a picture of impact upon the health of both rural and urban South Carolina.

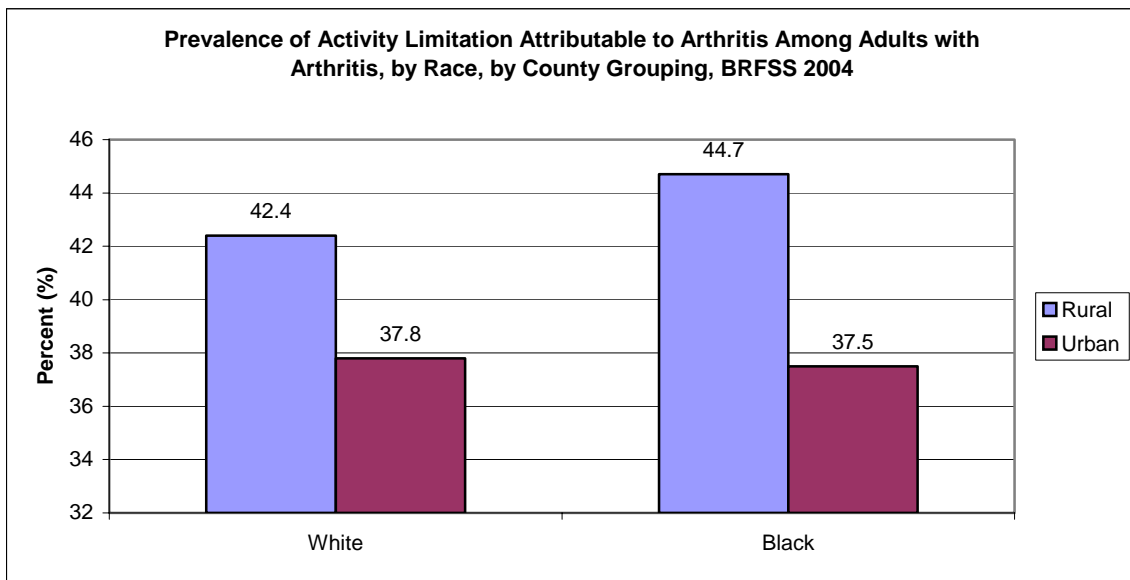
Among those with arthritis, there was no significant difference in the prevalence of activity limitation by gender groups between urban and rural counties in South Carolina.



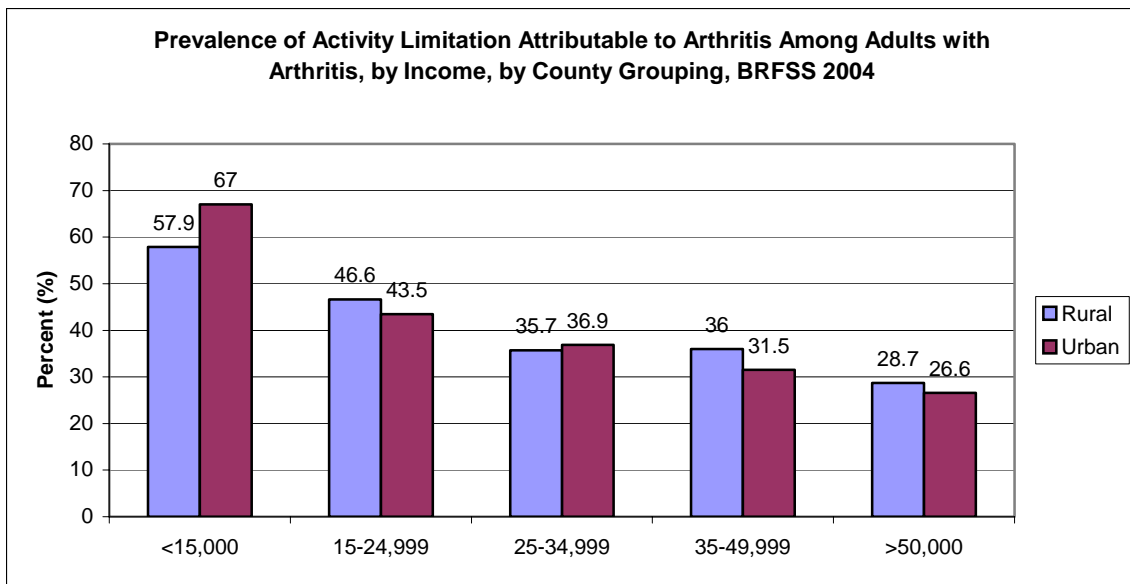
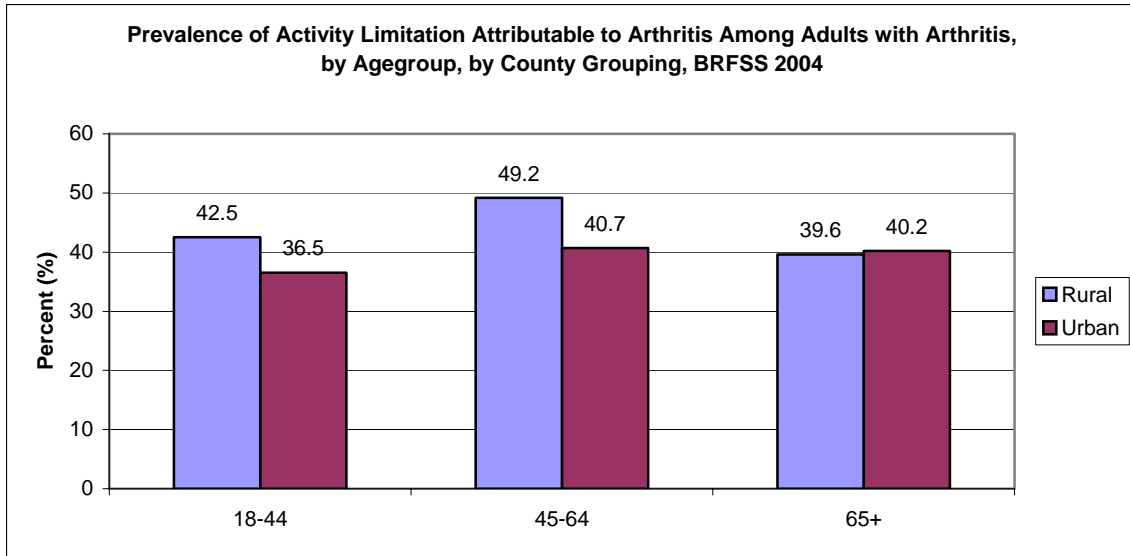
There was no significant difference in the prevalence of activity limitation among those respondents with arthritis in education groups between urban and rural counties.



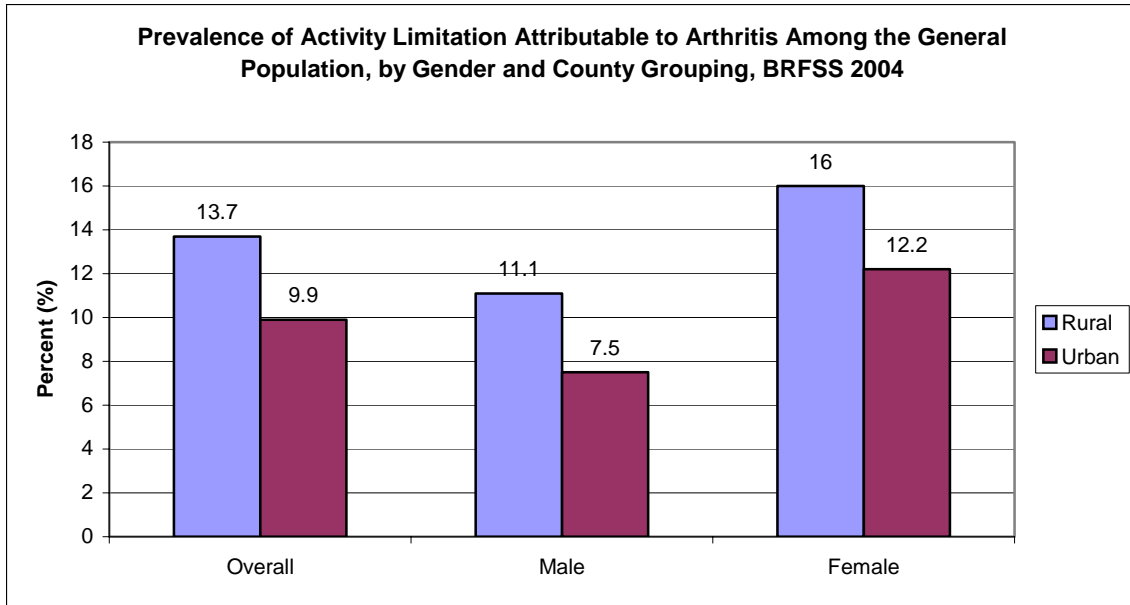
There was no significant difference in the prevalence of activity limitation among those with arthritis among race groups between urban and rural South Carolina.



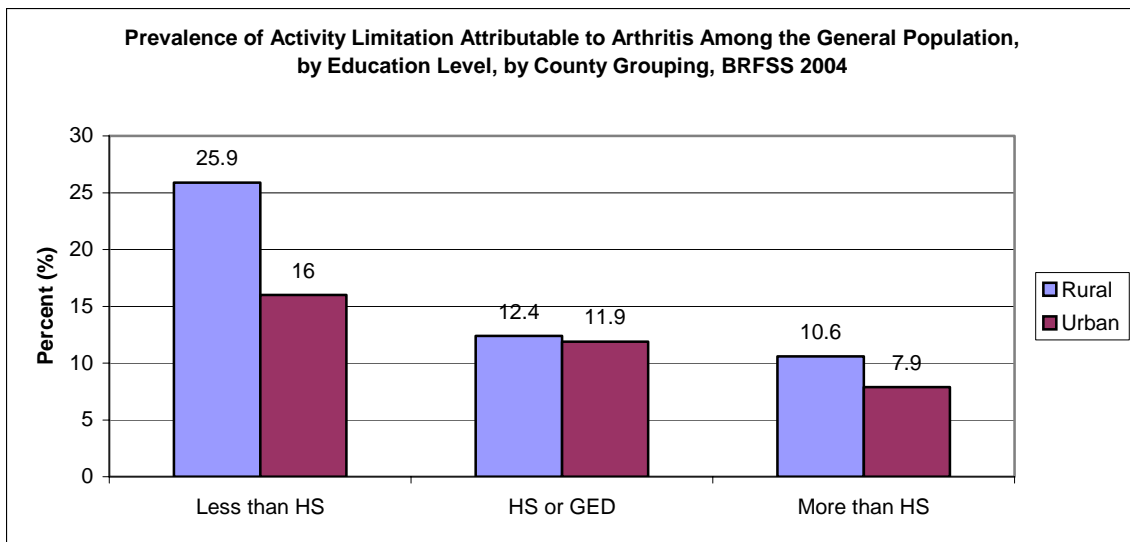
Additionally, there was no significant difference among age groups or among income groups between urban and rural South Carolina.



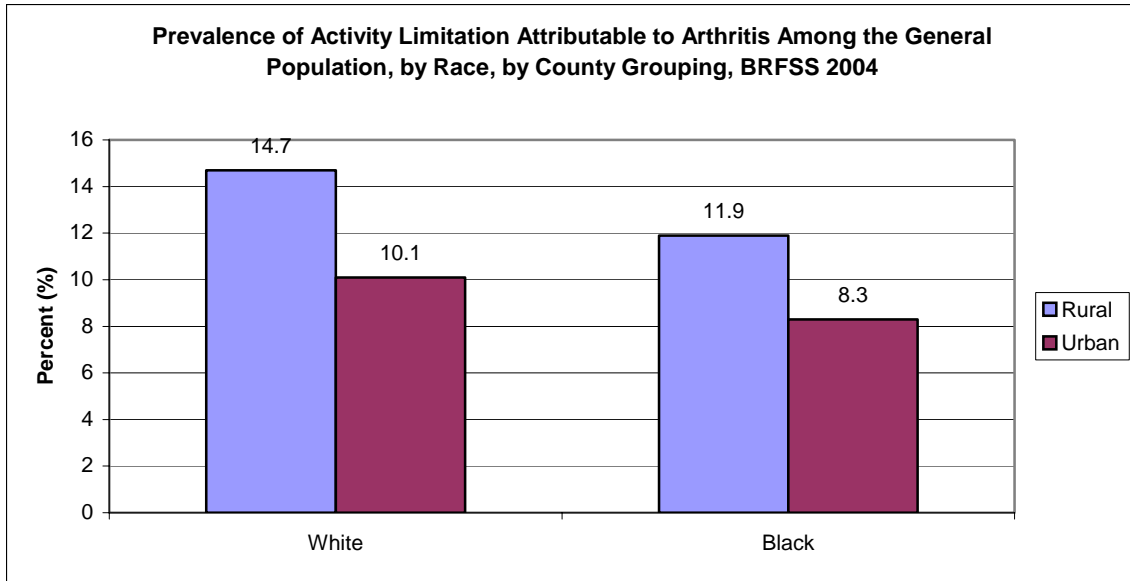
Among the general population, the trends are slightly different. Among women, there was a higher proportion of activity limitation among the general population in rural counties than in the urban counties.



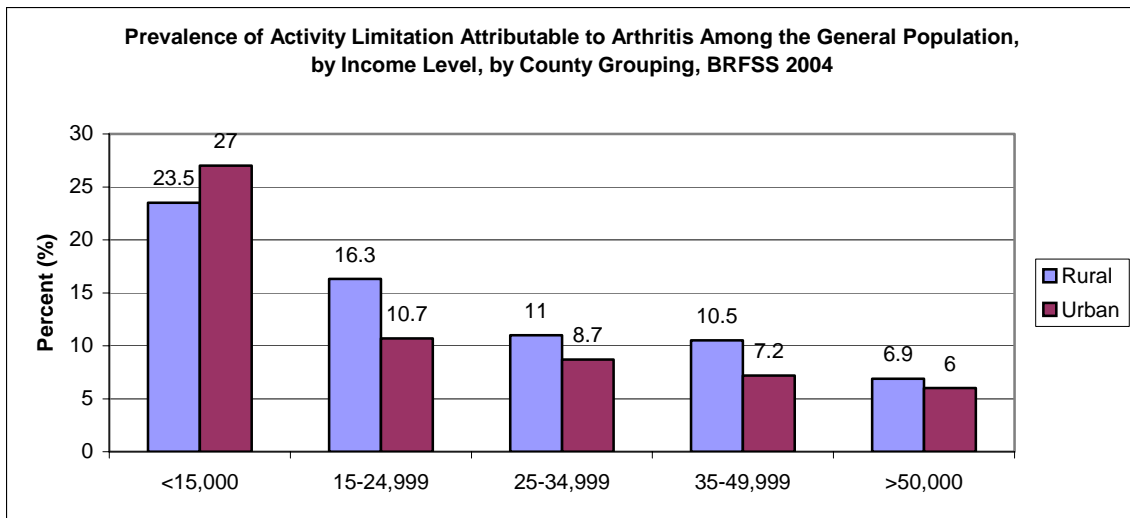
Among education groups, there was a higher proportion of those with less than a high school education having activity limitation in rural South Carolina, than in urban South Carolina.

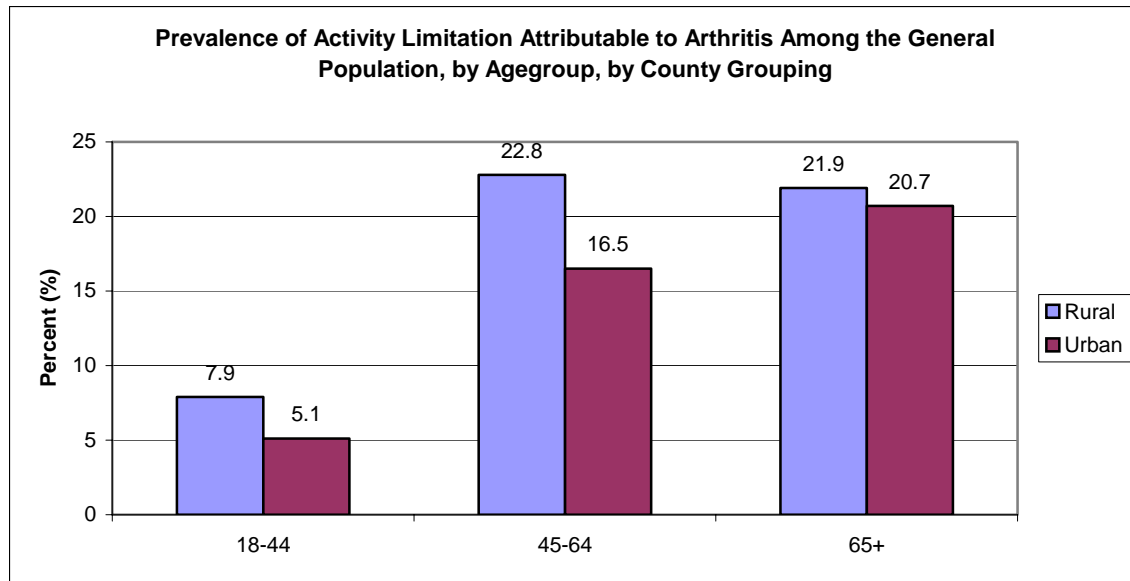


Among Caucasians, there was a higher proportion of those with activity limitation in rural South Carolina than urban South Carolina.



There were no significant differences between age groups or income groups for the proportion of activity limitation attributable to arthritis in the general population between urban and rural South Carolina.





***Discussion:***

There was a significantly higher proportion of residents living in rural South Carolina with doctor-diagnosed arthritis than in urban sections of the State. In an effort to elucidate which of the subgroups in the population were seeing this increase, analyses to examine prevalence rates within subgroups was completed.

Women living in rural South Carolina had a higher prevalence of doctor-diagnosed arthritis than those living in urban centers. Additionally, there was an increased prevalence of arthritis in the rural portions of the state for Caucasians. There was no significant difference seen in the prevalence rates of arthritis between urban and rural portions of the state for African Americans. The sample size for African Americans affected by arthritis is smaller than that of the Caucasian population. This smaller sample size yields larger confidence intervals and effects whether or not significance is reported. An increase in the overall sample numbers for the state may help to elucidate the relationship in future years.

Among those with less than a high school education, there was a significantly higher proportion of residents with doctor-diagnosed arthritis living in rural counties than in urban counties. Although the number of residents in this subgroup is small, there still remains a significant difference between the two county types of residence. The difference in prevalence is almost 20%.

Finally, there was a significantly higher proportion of residents earning between \$15,000 and \$24,000 annual household income with doctor-diagnosed arthritis living in rural South Carolina than in urban centers of the state.

There were some significant differences on the measure of impact (activity limitation) between urban centers and rural South Carolina. These differences occurred when the activity limitation impact was measured in the general population of the state. Since this number takes into account the percentage of not only those residents with arthritis, but also the proportions of each subgroup within the county groups, it can be used as a measure for determining the impact of arthritis symptoms in the different counties.

However, when examining whether there is a significant difference in the actual impact of activity limitation, it is advised to use the measure of activity limitation among those respondents with arthritis. The detriment to using this measure is the decreased sample size and the subsequent widening of the confidence intervals. This decreases the possibility of finding a significant result between subgroups.

There was no significant difference in the prevalence of activity limitation among those with arthritis in any of the examined subgroups. Inherently this means there is no actual difference in the prevalence of activity limitation according to the results when examined for a difference in the presentation of activity limitation among the county groupings. However, there is a difference in the prevalence of activity limitation among the general population between education levels and race as well as gender. In the case of education levels and race, there are significant differences in the percentage of the subgroups between urban and rural counties.

Information from the BRFSS has shown a trend that activity limitation is higher among the lower education groups, among women and among blacks in the state population. In the case of African Americans and lower education groups, the percentage is higher among the rural parts of the state than in the urban centers. Therefore, it is possible that the increases seen in the rural portion of the state are because of this disproportionate difference in percentages of the demographic subgroups.

Additional analysis should be pursued to examine the impact that arthritis is having on the population of rural South Carolina. Logistic regression can be used to examine the factors in this difference.

#### References:

1. Eberhardt MS, Ingram DD, Makuc DM et al. Urban and Rural Health Chartbook. Health, United States, 2001. Hyattsville, MD: National Center for Health Statistics, 2001.